

Private Drinking Water Protection Committee Summary Report to GSWA Board of Directors

Background:

The Private Drinking Water Protection Committee was originally formed to explore the challenges and available options for protecting private drinking water intakes within the Sudbury watersheds. The possibility of requesting protection under the Clean Water Act was explored, however, we were advised that the protection could be costly for the City, would likely not provide the level of protection required, and would be very difficult to drop out if it became unworkable for the City.

Recommendation: Mention of the Clean Water Act is part of GSWA's Constitution and since it is no longer a goal it must be removed and amended at the next Annual General Meeting.

Goals and Objectives of the Committee:

The primary focus and strategy of the Committee was to:

- Engage discussion and brain storm with regulatory agencies;
- Research drinking water models and gather information; and
- Report back with recommendations to the GSWA Board.

The Committee met with the Sudbury and District Health Unit, Conservation Sudbury, and spoke with Marnie Managhan, Drinking Water Protection, Ministry of Environment. The results of these meetings are reflected in the Committee's recommendations to the Board below.

Challenges:

The Committee discussed whether we should only use Conservation Ontario's list of accepted risks, or whether we should address risks specific to our area. It was decided we should explore all options and include all major risks for the Board's consideration; however, the Committee also briefly discussed numerous minor risks such as the impacts of ice fishing, planes and boats, which have a cumulative effect on water quality.

Sudbury also has special needs and is exceptional because of:

- A long history of intense mining;
- City of lakes;
- An abundance of rock – lots of runoff;
- Heavily contaminated soils and sediment^{1, 2, 3}; and
- City has numerous wastewater treatment facilities releasing effluent.

The Committee felt our objective needed to be a protective strategy that:

- Is likely to be approved by those authorities making the decisions; and
- Is not prohibitively costly.

Major Threats to Freshwater:

- Waste water effluent;
- Mining effluent;
- Hydroelectric with headponds and swings in flow velocity and water levels;

¹ Sudbury Soils Study

² 1986 MOE Sediment Study – Wabagishik Lake

³ 2013 Queen's University Sediment Core Study – Wabagishik Lake

- Stormwater run-off; and
- Contaminated soils and sediment.

Cumulative Effects:

It is also important to consider the cumulative effects of all past present and future development within a watershed. No municipal or government authority is looking at the cumulative effects of Cliffs, Xstrata Zinc, Victoria Mine, Totten Mine, Vale and individual residential development in the watersheds. Each are addressing their own individual projects and zones of influence, but no one is looking at the cumulative effects on a watershed scale – this is very important and key to healthy freshwater resources.

Minor Threats to Freshwater:

- Ice fishing hut practices contaminate freshwater
- Aircraft and boats carry invasive species

The Committee looked at existing drinking water protection models:

- Lake Simcoe Clean Water Act
 - Not the best option as it would be difficult to gain support from the government for a Provincial Act.
- Municipal Models the Committee researched
 - Tiny Township
 - Lampton Shores
 - Welland
 - Mattawa
 - Georgina
 - Huron County
 - this model came out on top;
 - a very successful model; and
 - it could be adapted to our situation.
- Need to end up with a protection strategy that is likely to be approved.

Recommendations to the Board:

1. Amend GSWA's Constitution:

The Committee determined that any efforts for protection under the Clean Water Act would not be practical. Mention of the Clean Water Act is part of GSWA's Constitution.

Recommend:

Amend GSWA's Constitution at the next Annual General Meeting by removing mention of the Clean Water Act from our list of goals.

2. Raise an Awareness – Education

Education and raising an awareness of our fresh water concerns is paramount to our success. There are numerous areas of concern and each lake stewardship group may have slightly different challenges. However, a great example of information that would benefit many of our members is the following booklet prepared by Fairbanks Lake Stewardship:

- Demystifying Septic Systems

- To educate about best practices for septic system maintenance and development.
- Used a Lake Advisory Panel grant as partial payment.

Some excellent community-based social marketing tools were brought to our attention that could increase success of changing peoples' behaviours.

Recommend:

1. Encourage and coordinate articles from Stewardship groups for publication in the local papers. This will raise the level of awareness with the public of water concerns and what everyone can do to help.
2. GSWA could help with funding of educational booklets; and
3. A Wastewater/Stormwater Forum for GSWA's annual Science North event – in April 2014.
4. Use Community-based Social Marketing tools designed to remove barriers and build a desire to commit to changing behaviour - information available [here](#).

3. Ontario Grants for Community Projects

Turning Spill Penalties into Environmental Benefits

- Deadline was 8 November 2013.
- Spanish, Vermilion and Wanapitei watersheds qualified for this grant.
- Could be used to undertake a watershed study.
- Appears to have funded this type of study in the past.
- Explore the possibility of applying next year.

Recommend: Explore grants to fund important initiatives.

4. Address Concerns through the Official Plan

MOE advised that:

- There are no real legislative provisions for what we are trying to do with private drinking water.
- Suggested we address it through the municipality – the Official Plan.
- Need data to support major requests or claims.
- Use the Source Protection model – prepare a land use survey (broad strokes) to identify areas of potential impact.
- Incorporate data from local studies and reports:
 - Suggested the Vermilion River Stewardship's water quality study will be very pertinent information (VRS study report will be completed in 2015); and
 - There are numerous other pertinent studies that could also be compiled.
- Suggested we educate our community that prevention is paramount:
 - Proper vegetative buffers;
 - No manicured lawns on a waterfront property;
 - Proper development setbacks;
 - Septic inspection and maintenance to avoid breakthroughs of effluent leaking directly into the watershed;
 - Treatment of freshwater is a must - ultra violet, filters, etc; and
 - Test drinking water frequently.

MOE suggested that once we have all the information and cursory assessments we should contact them again to set up a meeting with their Drinking Water Management, Abatement, and Technical surface water specialists to discuss potential next steps.

New information regarding the importance and efficiency of a properly maintained septic system was recently brought to our attention through the Hutchinson report that stated, "While shoreline septic systems can be a significant source of phosphorus to lakes, recent scientific studies have shown that much of the septic phosphorus load is attenuated by acidic and mineral-rich soils found in the Precambrian Shield.... such that over 90% of septic phosphorus may be immobilized. The mineralization reaction appears to be permanent, and recent studies conclude that most septic phosphorus may be stable within 0.5 m of the tile drains in septic field."⁴

Recommend:

1. GSWA submission to the Official Plan regarding:
 - a. Increased setbacks for septic systems on waterfront properties – 30m or 100 feet (pending SDHU recommendations); and
 - b. Mandatory septic inspection.
2. Follow advice of MOE to make a case and meet with them in the future to discuss possibilities.

5. Blue-green Algae and Drinking Water

The Bayside Water Treatment plant draws water via a gravity raw water intake pipe, 404m long extending approximately 370m into the Bay of Quinte. This conventional chemically assisted filtration plant has a rated capacity of 11,360 m³/day. Processes used at the filtration plant include flocculation, sedimentation, Dual-Media filtration, and Granular-Activated Carbon adsorption filtration.

- Reduced toxins from a level 3 to a level 1.
- 3 processes in treatment
 - Flocculation can remove cyanobacteria but not the toxin.
 - Chlorination does not remove toxins.
 - Carbon filter seems to work best.
- Conventional water treatment facilities can remove the cells by adding chemicals that bind them together. As the cells clump together, they become heavier and fall to the bottom of the reservoir or tank, where they can be easily filtered out. While this method will remove cells, it will not remove potentially harmful Cyanobacterial toxins. These can be removed using certain **oxidation procedures or activated charcoal**. Further research in this area is required.
- Of the water treatment procedures discussed by the National Institute of Health, **chlorination, possibly micro-/ultrafiltration**, but especially **ozonation** are the most effective in treating and destroying cyanobacteria, and in removing microcystins. However, these treatments may not be sufficient during bloom situations or when a high organic load is present, and toxin levels should therefore be monitored during the water treatment process.
- Ultrafiltration has not yet been established as being able to remove toxins.
- Cyanobacterial Toxins: Removal during Drinking Water Treatment, and Human Risk Assessment.
- The effects of Cyanobacteria and its toxins range from liver damage, including liver cancer, to neurotoxicity.
- World Health Organization set a new guideline for microcystins at 1.0 microg/L drinking water.

⁴ Development and Application of a Water Quality Model for Lakes in the City of Greater Sudbury, Hutchinson Environmental Sciences Ltd, P-14

Recommend: GSWA cannot recommend any form of filtration to remove Cyanobacterial toxins on private intakes at this time.

6. Huron County Model

This project is under the auspices of the Huron County Water Protection Steering committee. The initial need was recognized because of a disagreement between the Agricultural sector of the county and the Tourism sector. Councillors, community, agricultural, and tourism, as well as provincial representatives are involved. One very dedicated and enthusiastic staff member of Huron County herds everyone through the process.

- The project is a line item in the Huron County budget.
 - Budget started at \$100,000 5 years ago and is now at \$400,000.
 - Money comes from Huron County funds and some granting agencies. (Conservation Authorities do the grant writing).
 - The project is seen as an economic driver by council because it means contractors are hired to do the work within the county.
 - Landowners contribute 50% of the cost of their project. So double the Councils contribution moves out into the community.
- The list of threats to water included in the project were developed by the Conservation Authorities: Ausable Bayfield Conservation Authority and Maitland Valley Conservation Authority.
 - Criteria included what could be done with the money available.
- Changes occur yearly and they must meet with Council approval.
- The involvement of the CAs does not cost the County because they are funded by lower tier municipalities.
- Project approval is done by a review committee with representatives from council, agriculture and tourism.
- An optimum budget for this project would be a million dollars so then manure storage and septic system maintenance and inspection could be included.

This area is very different from the Sudbury district but the model for development of a private water project has some promise.

Recommend: GSWA and Conservation Sudbury form a committee to explore developing and implementing the Huron County Model here in Sudbury.

7. FOCA

FOCA has already had valuable experience and done a lot of research that GSWA could benefit from. FOCA is also very active in commenting on government policies and legislation that impacts on water quality and water quantity.

Recommend: GSWA join FOCA.

Another great idea for consideration in general:

1. Host a tour for City Councillors and the Mayor (candidates as well) in August to some of the hot spots, such as Simon Lake, to provide first-hand knowledge of our concerns.